

US-PAT-NO: 6,048,217

DOCUMENT-IDENTIFIER: US 6048217 A

TITLE: Connecting device for high-voltage cable

DATE-ISSUED: April 11, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kobayashi; Yoshinao	Yokkaichi	N/A	N/A	JP

ASSIGNEE INFORMATION:

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Sumitomo Wiring Systems, Ltd.	Yokkaichi	N/A	N/A	JP

APPL-NO: 08/969540

DATE FILED: November 13, 1997

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	8-304691	November 15, 1996
JP	8-304692	November 15, 1996
JP	8-304693	November 15, 1996

INT-CL: [07] H01R013/44

US-CL-ISSUED: 439/125

US-CL-CURRENT: 439/125

FIELD-OF-SEARCH: 439/125-128

REF-CITED:

U. S. PATENT DOCUMENTS			
PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4443047	April 1984	Hofman	N/A
5332394	July 1994	Frost	439/1
5348486	September 1994	Tura, Jr. et al.	439/1
5630722	May 1997	Mochizuki et al.	439/1

ART-UNIT: 283

PRIMARY-EXAMINER: Paumen; Gary F.

ABSTRACT:

An L-shaped plug connection for connecting a high-voltage cable to a spa plug includes a socket terminal having a tubular cable-connecting portion having an inner diameter and a semi-tubular plug connecting portion being provided in a perpendicular direction to the cable-connecting portion and having an open end zone. The end zone has a wall thickness, a pair of opposite rim portions, and an intermediate cavity portion being provided therebetween and having a predetermined dimension in the transverse direction of the cable-connecting portion. The socket terminal also includes a C-shaped elastomer ring and an elastomeric boot having an L-shaped cavity which includes at least one rib.

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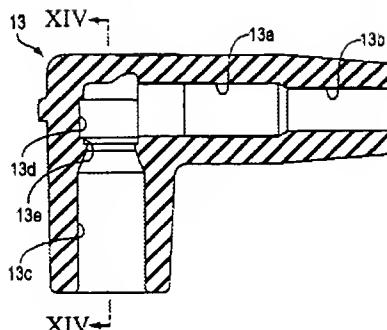


FIG. 13

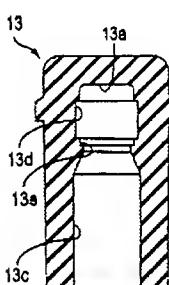


FIG. 14

US-PAT-NO: 5421736

DOCUMENT-IDENTIFIER: US 5421736 A

TITLE: Construction for retaining coiled spring of high-voltage terminal engine ignition system

DATE-ISSUED: June 6, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Imanishi; Hisao	Yokkaichi	N/A	N/A	JP
Nakajima; Keiichi	Yokkaichi	N/A	N/A	JP
Fujita; Tadashi	Yokkaichi	N/A	N/A	JP

ASSIGNEE INFORMATION:

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Sumitomo Wiring Systems, Ltd.	Yokkaichi	N/A	N/A	JP

APPL-NO: 08/ 226084

DATE FILED: April 11, 1994

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	S-021426 U	April 23, 1993

INT-CL: [06] H01R013/434;H01R004/48

US-CL-ISSUED: 439/125;439/127 ;439/893

US-CL-CURRENT: 439/125; 439/127 ; 439/893

FIELD-OF-SEARCH: 439/125; 439/127-130 ; 439/843 ; 439/846 ; 439/893 ; 123/1 ; 123/169PH

REF-CITED:

U.S. PATENT DOCUMENTS			
PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
1933304	October 1933	Bell	N/A
5332394	July 1994	Frost	439/1
5340323	August 1994	Imanishi et al.	439/1

FOREIGN-PAT-NO	FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
2-33473		February 1990	JP	
3-47475		February 1991	JP	
3105072		May 1991	JP	
5-52175		March 1993	JP	

OTHER PUBLICATIONS

English Language Abstract of JP' -47475.

English Language Abstract of JP 5-52175.

English Language Abstract of JP 2-33473.

U.S. Patent June 6, 1995 Sheet 1 of 3 5,421,736

Fig. 1 PRIOR ART

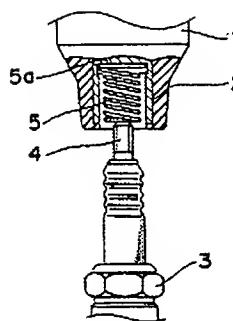
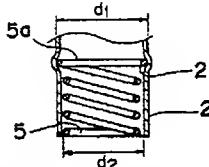


Fig. 2 PRIOR ART



US-PAT-NO. 1509224
DOCUMENT-IDENTIFIER: US 1509224 A

TITLE: OCR SCANNED DOCUMENT
DATE-ISSUED: September 23, 1924

US-CL-CURRENT: 439/430,123/169PH , 313/135

Sept. 23 1924. G. H. E. BERTHOLD 1,509,224 ELECTRIC TERMINAL Filed April 1923 6 6q 4 7 9 -4- 71 INVENTOR BY G ATTORNEY
Patented Sept. 23, 1924. IP509224 UNITED STATES PATENT OFFICE. GEORGE H. BERTHOLD, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO RATTAN AUTO SUPPLY CO., OF BLOOMFIELD, NEW JERSEY, A CORPORATION OF NEW YORK. ELECTRIC TERMINAL.
Application filed April 3, 1923. To whom it may concern: Be it known that I, GEORGE H. E. BERTHOLD, a citizen of the United States, and resident of East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Electric Terminals, of which the following specification. The object of my invention is to provide 10 a simple and efficient terminal or attachment device adapted to be secured to an insulated electrical conductor and to be readily connected with and detached from an electrode, post or other element of an electric circuit, 15 having means to make good electrical contact with the latter and be maintained in a desired position thereon to avoid danger of becoming detached or making poor connection. 20 In carrying out my invention I provide a tubular member or ferrule having slots and adapted to fit upon or receive an electrode or other electric circuit terminal, a spring clip associated with said ferrule and having 25 resilient spaced arms adapted to pass through said slots to engage electrode, with means to attach said ferrule to an electric conductor. My invention also comprises novel details 30 of improvement that will be more fully hereinafter set forth and then pointed out in the claims. Reference is to be had to the accompanying drawings forming a part hereof, 35 wherein Fig. 1 is a side view of a spark plug equipped with my improved terminal, on an exaggerated scale; Fig. 2 is a section on line 9, 2, in Fig. 1; 40 Figs. 3 and 4 are sections respectively on lines 3, 3, and 4, 4, in Fig. 2; and Figs. 5 and 6 are sectional details of modifications. Similar numerals of reference indicate corresponding parts in the several views. At 1 is a sleeve or ferrule open at one end and adapted to fit over or receive an electrode, post or other electric terminal 2. The sleeve or ferrule 1 is shown slotted on opposite sides, at 3, and at 40 is a clip having one or more resilient spring arms 41, preferably two opposing arms, adapted to pass through the slots 3 to engage the electrode or terminal 2. The cross bar or base portion 4b of 4 is secured over the closed outer end of sleeve 1923. Serial No. 629,5 or ferrule 1 and said parts are attached to an electric conductor 5. In the example illustrated a sleeve 6 is provided with a stud or projection 7 extending through registration holes in clip 4 and ferrule 1, the 60 inner end of said stud being riveted over to secure the parts 1, 4 and 6 securely together so that the base 4b of the clip is securely clamped between the closed outer end of ferrule 1 and the closed base or end 65 61. of sleeve 6. In 2 the sleeve 6 is shown provided with an interior tapered projection 8 which enters the cable wires of the conductor 5 to make electrical contact therewith, the insulation 51, of the conductor 70 or fitting within the sleeve 6. To retain the sleeve, on the insulation the free end of the sleeve 66 must be crimped or dented into the insulation, as shown at 9, or secured in any other desired way. Instead of having a solid stud or projection 7, may extend from sleeve 6, a stud or projection 71, may extend from ferrule 1 to secure the parts 4 and 6 thereto, as illustrated in Fig. 5. Instead of utilizing projection 80 8 to make contact with the electric cable the latter may be secured to either the ferrule 1 or sleeve 6 in any desired manner. In Fig.

Sept. 23, 1924.

G. H. E. BERTHOLD
ELECTRIC TERMINAL
Filed April 3, 1923

1,509,224

